Remarks

Before responding to the details of the Rejection, some brief background information is first noted. As discussed in Applicants' specification, the present disclosure relates to the self-sustaining particulate filter regeneration, and maintaining proper temperature control of such operation. In one example, this is accomplished by controlling excess oxygen in the exhaust to limit the self-sustaining exothermic reaction and thereby prevent temperature from rising greater than some value.

The Rejection first applies Nakayama et al. (JP 60-090931) to claims 1-8, 10-12, and 15. Since the reference has only an English Abstract, Applicants have had a partial translation performed related to several specific aspects of the reference. Specifically, partial translations of the flow charts have been completed to better understand the disclosure of Nakayama et al. The partial translations are included herewith in an information disclosure statement, and Applicants respectfully request that they be considered.

A. Claim 1

Turning now to the claims, Claim 1 states:

> 1. A method for regenerating a particulate filter coupled to an exhaust system of an internal combustion engine, where the exhaust system terminates at a tailpipe, comprising:
>
> commencing a self-sustaining filter regeneration;
>
> monitoring whether said regeneration causes temperature of said particulate filter to become greater than a predetermined value;
>
> in response to said monitoring, adjusting one or more operating parameters so as to limit exothermic reaction via control of an excess oxygen amount entering said filter and prevent temperature from rising to become greater than a pre-selected value; and

continuously flowing all exhaust emitted from the tailpipe through the particulate filter.

A.1 Continuous Exhaust Flow Through the Particulate Filter

Applicants respectfully submit that claim 1 patentably distinguishes the cited reference since, for example, Nakayama et al. intermittently bypasses some of the exhaust around the particulate filter to be emitted from the tailpipe, whereas claim 1 requires continuously flowing all exhaust emitted from the tailpipe through the particulate filter.

To understand Nakayama et al., the physical structure shown in Figure 3 is reproduced below. Specifically, Figure 3 of Nakayama et al. shows how EM valve 42 allows exhaust gas to bypass the particulate filter 3 via exhaust bypass duct 41 and be emitted by the tailpipe into the atmosphere.

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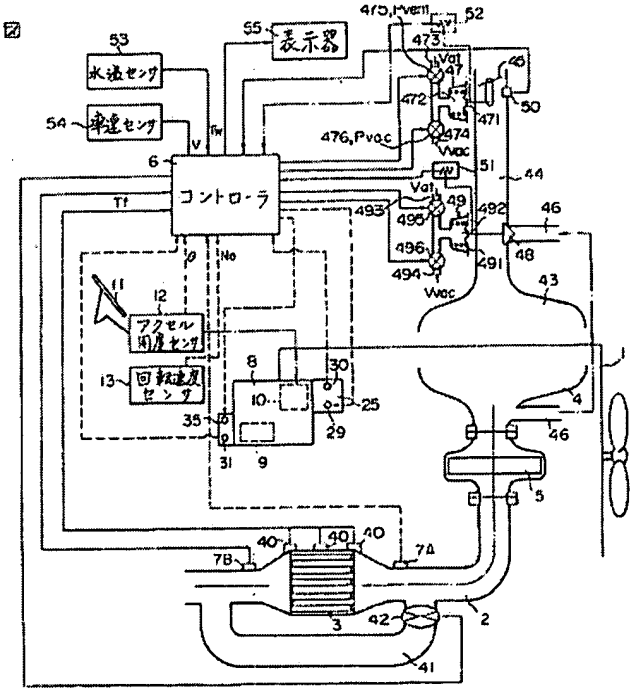
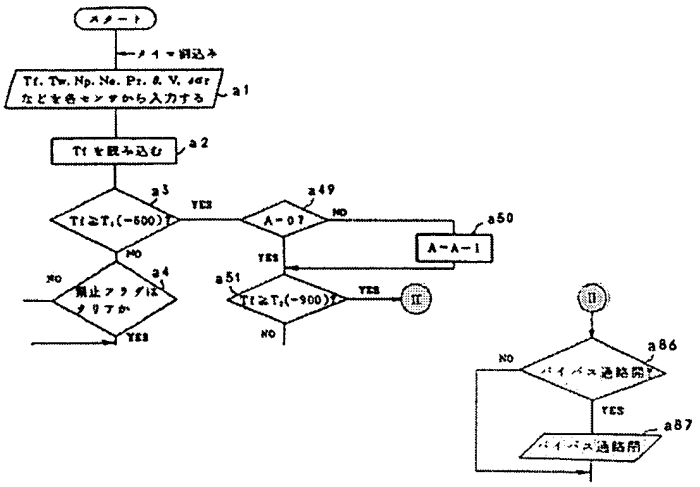


The control of EM valve 42 (and thus the exhaust bypass) is shown in Figure 12. Specifically, as shown by Figures 12a and

12c, Nakayama et al. specifically rely on being able to close valve 42 to the exhaust bypass 41 (among other actions) when filter temperature becomes too high. Specifically, a high exhaust temperature (above 900°C) is checked at step a51 of Figure 12a. If exhaust temperature is above this value, the routine moves to Figure 12c. Then, in steps a86 and a87, the routine closes the bypass valve 42 if it is open. This is shown by the highlighted portions of Figures 12a and 12c reproduced below (note that only parts of the Figures are reproduced, and the yellow highlighting has been added).



The approach of Nakayama et al. is directly contrary to the approach of claim 1. Claim 1 requires, for example, "continuously flowing all exhaust emitted from the tailpipe through the particulate filter." In this way, it is possible to reduce emitted emissions, such as soot, since all exhaust gasses are treated by the particulate filter, while also, maintaining proper temperature regulation by controlling an excess oxygen amount during self-sustaining filter regeneration. In summary, the cited reference not only fails to show all claimed elements,

it fails to recognize the advantages of the approach of claim 1 and even teaches away from such an approach.

Regarding the remaining cited references, Applicants respectfully submit that it would be improper to combine their teachings with Nakayama et al. This is clear since Nakayama et al. specifically relies on a bypass-type exhaust system when temperature becomes too high, and therefore teaches away from the exhaust configuration of Ludecke et al. Likewise, Kondo et al. fails to solve the deficiencies of Nakayama et al.

The above arguments also apply to claims 2-6 and 8-15.

A.2 Self-Sustaining Filter Regeneration

As another example difference between the cited reference and claim 1, Applicants can find no description of "self-sustaining" filter regeneration in Nakayama et al. The Examiner cites the abstract, but Applicants are unable to find any mention of self-sustaining filter regeneration in the Abstract.

The above argument also applies to claims 2-6 and 8-15.

Claim 7

Claim 7 states:

> 7. A system comprising:
> a diesel engine having an exhaust system;
> an exhaust gas oxygen sensor coupled in said exhaust system;
> an electronically controlled valve coupled to said engine;
> a diesel particulate filter in said exhaust system coupled to said engine; and
> a controller for commencing self-sustaining regeneration of said particulate filter, determining a desired oxygen flow, and adjusting said valve to provide said desired flow in response to said exhaust gas oxygen sensor.

Applicants respectfully submit that claim 7 patentably distinguishes the cited reference since there is no disclosure of an oxygen sensor in Nakayama et al. Specifically, the physical exhaust structure of Nakayama et al. is shown in Figure 3. However, Applicants can find no exhaust gas oxygen sensor in Figure 3, nor any disclosure of an exhaust gas oxygen sensor used in the flow charts for controlling oxygen concentration in the exhaust. As such, Applicants can find no disclosure of determining a desired oxygen flow, and adjusting a valve to provide the desired flow in response to an exhaust gas oxygen sensor. The remaining references also contain no such teaching.

Therefore, claim 7 should be allowed.

Conclusion

Based on the foregoing comments, the above-identified application is believed to be in condition for allowance, and such allowance is courteously solicited. If any further amendment is necessary to advance prosecution and place this case in allowable condition, the Examiner is courteously requested to contact the undersigned by fax or telephone at the number listed below.

Please charge any cost incurred in the filing of this Amendment, along with any other costs, to Deposit Account No. 06-1510. If there are insufficient funds in this account, please charge the fees to Deposit Account No. 06-1505. A duplicate copy of this sheet is enclosed.

CERTIFICATE OF MAILING

I hereby certify that the attached documents are being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop AMENDMENT, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on October 12, 2004.

Lauren Barberena

Respectfully submitted,

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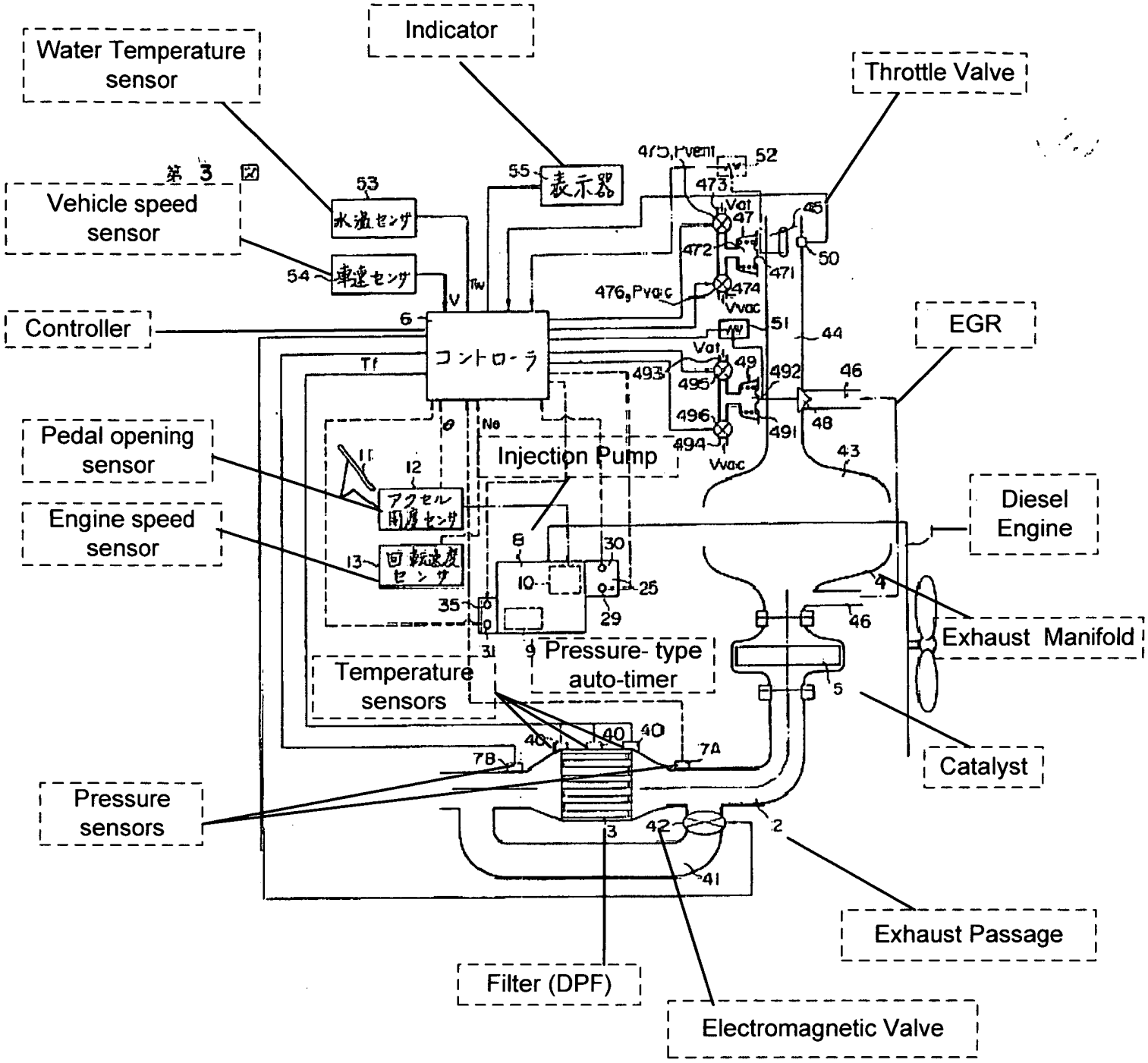

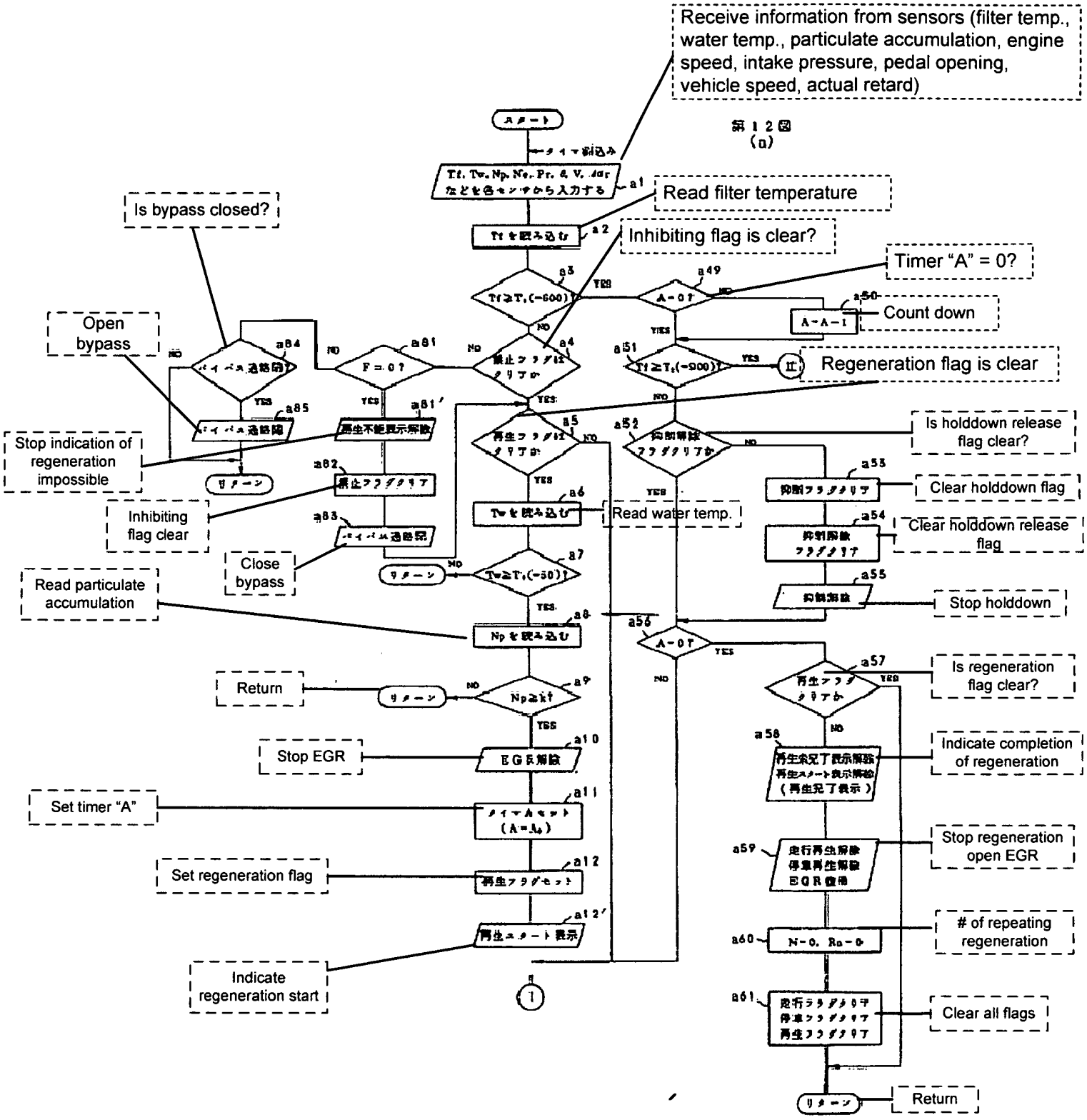

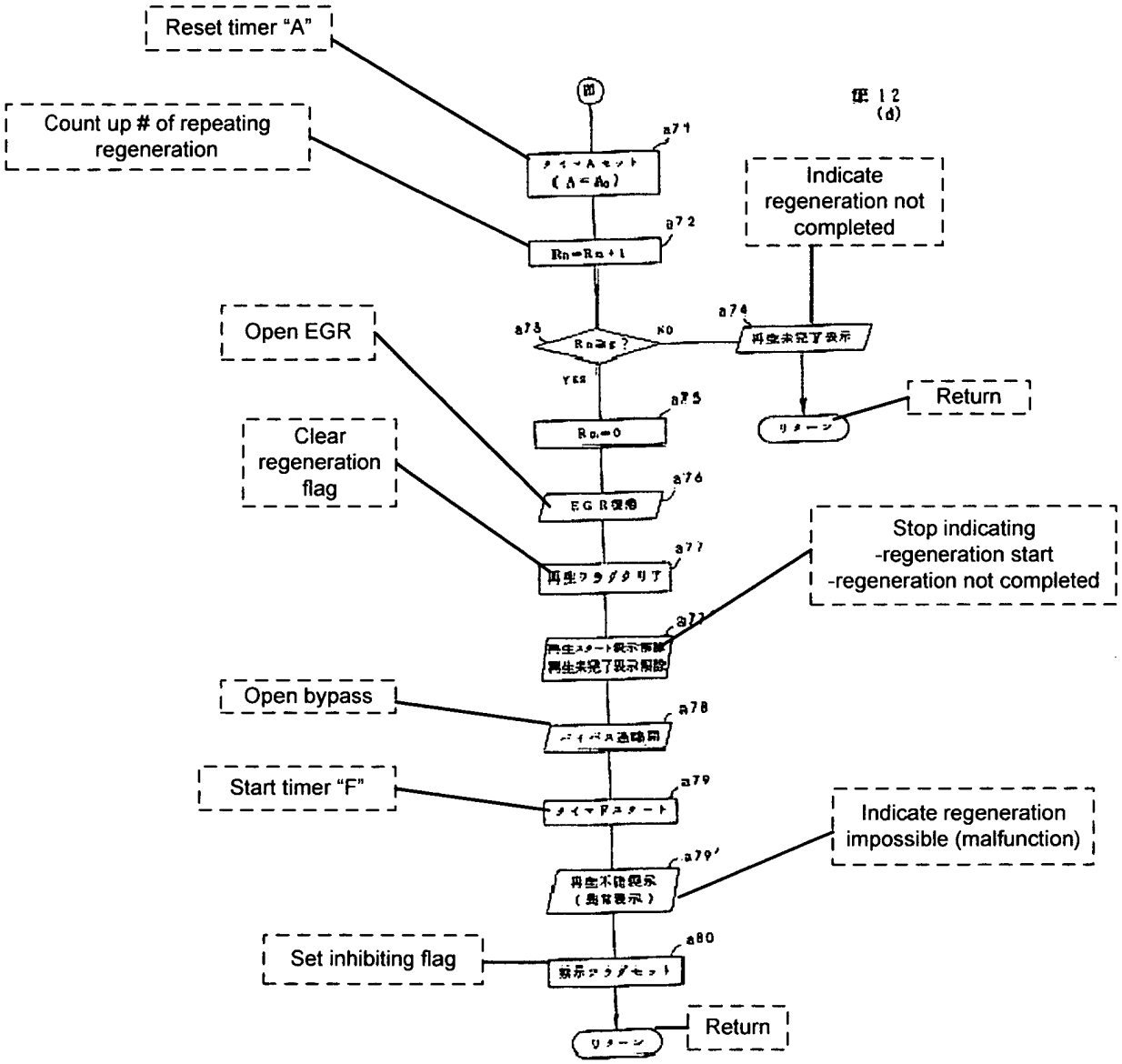

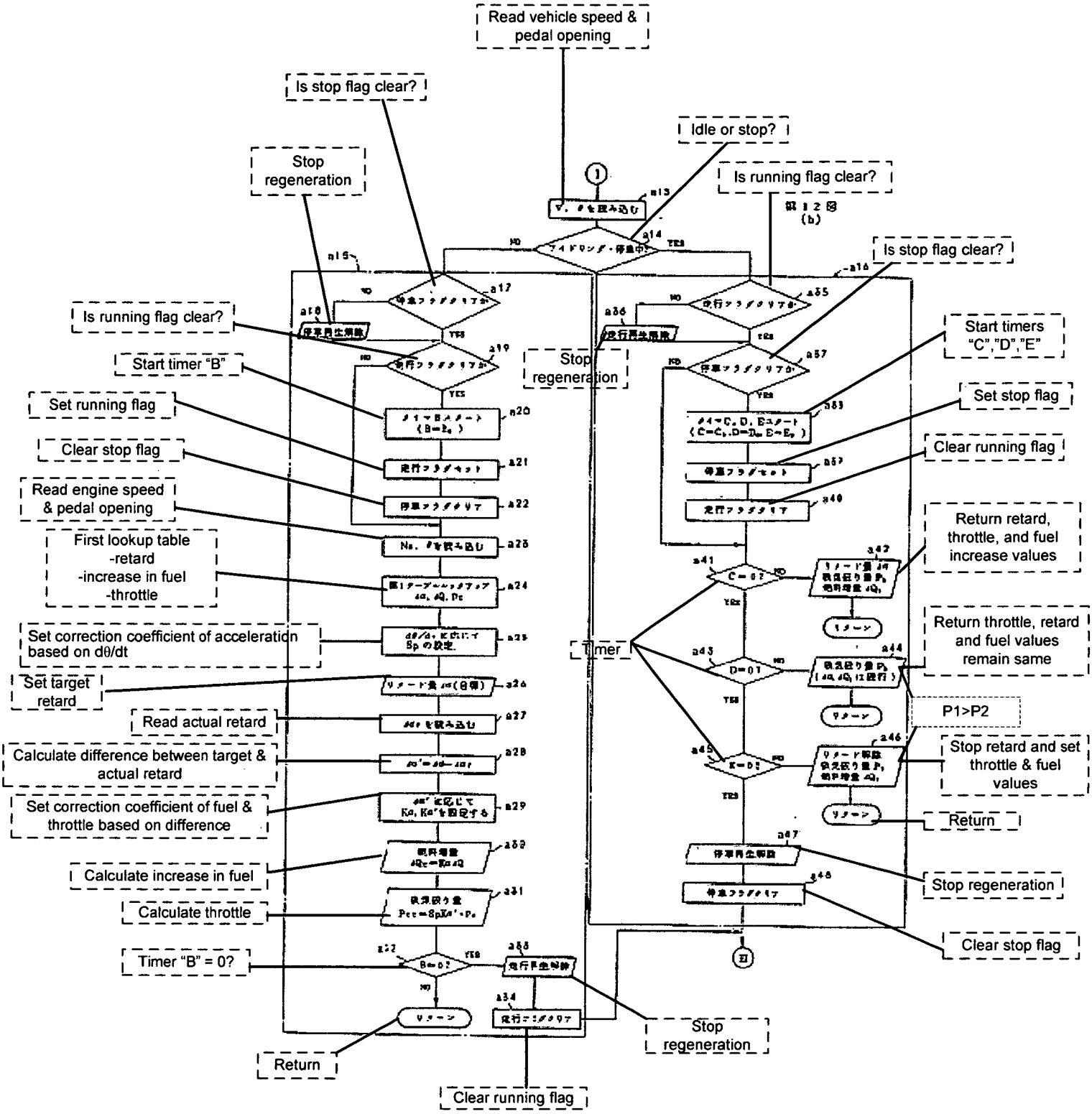

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